CLAIMS

1. A method for forming a pattern on a surface (10) by deposition of a mixture (20) that comprises an application material (22) and a phase-change transfer material (24), the method comprising the steps of:

b.) heating the mixture (20) to a melt;

c.) depositing the melted mixture (21) on the surface (10) with a phase-change printing technique, thereby the melted mixture (21) solidifies instantaneously when it reaches the surface (10); and

d.) removing the transfer material (24).

2. The method according to claim 1 further comprising the step of a.) mixing the application material (22) with the transfer material (24) to the mixture (20).

3. The method according the one of the preceding claims, wherein the step of removing the transfer material (24) comprises removing the transfer material (24) by sublimation.

4. The method according the one of the preceding claims, wherein the step of removing the transfer material (24) by sublimation comprises applying a low pressure to and/or heating the deposited mixture (20).

5. The method according the one of the preceding claims comprising repeating the steps b.) to d.) to deposit multiple layers.

6. A process for fabricating an organic light-emitting device (OLED) comprising the steps of:

heating a composition (20) to a melt (21), the composition (20) comprises an organic material (22) and a phase-change transfer material (24);

depositing the melted composition (21) onto a surface (10) by a phase-change printing technique, thereby the melted composition (21) solidifies instantaneously when it reaches the surface (10); and

removing the transfer material (24) whereby the organic material (22) remains on the surface (10).

7. A composition (20) for patterning a surface (10) comprising

an application material (22) for forming a pattern, and

a phase-change transfer material (24) that sublimates after patterning by an action.

8. The composition according to claim 7 being a mixed powder.

9. The composition according to one of the preceding claims 7 and 8, wherein the application material (22) comprises one of an organic material, an OLED material, biological molecules, nanoparticles, and a combination thereof.

10. The composition according to one of the preceding claims 7 to 9, wherein the transfer material (24) is a solid at approximately 0°C and melts at ambient pressure below 200°C.

11. The composition according to one of the preceding claims 7 to 10, wherein the transfer material (24) comprises cyclododecane or its derivatives.

12. The composition according to one of the preceding claims 7 to 11, wherein the transfer material (24) comprises one or more components.

13. The method according to claims 1 to 5 used to fabricate one of an organic electronic device, a monochrome and/or color display, a biological pattern, a biochip, a sensor, a semiconductor device, and a circuit.

14. A process for fabricating a field-effect transistor comprising the steps of:

forming source and drain contacts (402) on a substrate (400);

heating a composition (20) to a melt (21), the composition (20) comprises an organic material (22) and a phase-change transfer material (24);

depositing the melted composition (21) onto the substrate (400) with the source and drain contacts (402) by a phase-change printing technique, thereby the melted composition (21) solidifies instantaneously when it reaches the substrate (400);

removing the transfer material (24) whereby the organic material (22) remains on the surface (10) as an organic semiconducting layer (404);

forming an insulating layer (406) on the organic semiconducting layer (404); and

forming a gate contact (408) on the insulating layer (406).

15. The process according to claim 14, wherein at least one of the source/drain contacts (402), the insulating layer (406), and the gate contact (408) is created according to the method of claims 1 to 5 by the phase-change printing technique.

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